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The Liquidity of Money

In common usage, a liquid asset is one that can be exchanged readily for money, the liquid asset *par excellence*. Yet why is money itself liquid? Is there any meaning to the question? It is a tautology to speak of the liquidity of money, if liquidity is a matter of convertibility into money.

This paper argues that the standard definition, contained in the first sentence above, does not capture the full meaning of liquidity in *The General Theory* (Keynes, 1936, hereafter GT) and that Keynes distinguishes between the attributes of convertibility and liquidity. There is more to his conception of liquidity than convertibility: in principle, an asset with low convertibility may have high liquidity, and *vice versa*, however counter-intuitive this may now seem. Liquidity is intimately related in *The General Theory* with the uncertainty of expectation, and its meaning is fundamental to the understanding of the book as a whole.

How could Keynes be so perverse in his use of language as to make this interpretation tenable? In the opinion of Hicks (1972), the financial use of the term ‘liquidity’ originated with Keynes himself in *A Treatise on Money* (CW V–VI). Kaldor notes that

Mr Keynes, in certain parts of *The General Theory* appears to use the term ‘liquidity’ in a sense which comes very close to our concept of ‘perfect marketability’; ie goods which can be sold at any time for the same price, or nearly the same price, at which they can be bought. Yet it is obvious that this attribute of goods is not the same thing as what Mr Keynes really wants to mean by ‘liquidity’. Certain gilt-edged securities can be bought on the Stock Exchange at a price which is only a small fraction higher than the price at which they can be sold; on this definition therefore they would have to be regarded as highly liquid assets. In fact it is very difficult to find satisfactory definition of what constitutes ‘liquidity’ – a difficulty, I think, which is inherent in the concept itself. (Kaldor, 1939, p.4, n. 5)¹

A paradox of *The General Theory* is that Keynes so emphasises the liquidity of money within a theoretical framework based on perfect competition in which *all* assets are equally marketable or convertible.² Why does he then discuss ‘degrees’ of liquidity (GT, p. 226) and, furthermore, suggest that in certain historic environments *land* has ‘ruled the roost’ in the hierarchy of liquidity (GT, p. 241)? If the assumption of perfect competition is to be qualified in practice so that differences in the liquidity of assets are allowed, as a function of their degree of convertibility, this suggestion is startling. Land can never have been preferred for its convertibility, let alone as a medium of exchange. Keynes claims that historically it has possessed high liquidity

despite low convertibility. Conversely, in his discussion of organised investment markets which come closest in practice to the ideal of perfect competition, he treats their ‘liquidity’ (note the quotation marks) as an illusion and something distinct from true liquidity. Listed equity shares (common stock, in American usage) have high convertibility but low liquidity.

Victoria Chick solves part of the puzzle, when she points out that the issue is not just immediate convertibility at current prices, but immediate convertibility at *future* prices. Where an asset is held as a store of value, its liquidity depends on its price at a future date. Degrees of liquidity among assets can be identified with degrees of uncertainty about their future prices. She maintains the liquidity of money as a store of value is rooted ultimately in its general acceptability as the medium of exchange.³ Yet land is not convertible at short notice and has never been a medium of exchange.

Section 1 offers a definition of liquidity as stability of value with respect to changes in the state of long-term expectation. This definition resolves the paradox of Keynes’s emphasis on liquidity, while assuming general convertibility, and goes further by illuminating the reference to land and, in section 2, the distinction between Keynes’s liquidity and the ‘liquidity’ of organised investment markets. We then consider this definition of Keynes’s liquidity under the headings of transaction costs (section 3), financial structure and cash flow (section 4), price variability (section 5) and stability of value (section 6), drawing upon the work of Paul Davidson, Hyman Minsky and Victoria Chick, in order to locate the points of departure.

1. Liquidity as stability of value with respect to changes in the state of long-term expectation

George Shackle, echoing Joan Robinson (CW XIII, p. 646), complains that in *The General Theory* ‘Keynes wholly fails to say *what liquidity is*’ (1974, p. 63). In *A Treatise on Money* Keynes defines (in passing) a liquid asset as one that is ‘more certainly realisable at short notice without loss’ (CW VI, p. 59). Is there more to this than convertibility, whether at present or future prices?

Liquidity preference is a consequence of the fundamental uncertainty of a non-ergodic world (Davidson, 2002). Keynes’s notion of liquidity preference has no place in an ergodic model of long-term ‘rational expectations’, where it reduces to aversion to statistical risk (Tobin, 1958 and the subsequent capital asset pricing model). The

significance of liquidity derives from the possibility of changes in the state of long-term expectation itself (by definition, unexpected changes). From a neo-classical perspective such changes might be interpreted as a change in the underlying objective probability distribution governing the prospective yield of investments, although Keynes would not admit the existence as a general rule of such distributions⁴ and neo-classical economics cannot allow the possibility of such change. Liquidity protects cautious investors against an adverse change and conversely puts speculative investors in a position to profit by correctly anticipating change (essentially by short-selling less liquid assets).

Liquidity risk is then the possible (*not* probable) loss of value as a result of a change in the state of long-term expectation.⁵ The liquidity premium is the additional prospective yield required by investors to compensate for the liquidity risk of one asset relative to another. The size of this premium will depend upon the differences in the degree of confidence with which investors view the prospective yields of each asset.⁶

When the liquidity of money is at issue, we are led back to the tautology. There is no liquidity risk in holding money, relative to itself. An independent measure of the value of money is required and Keynes supplies this in *A Treatise on Money*. He defines the value of money as ‘general purchasing power over consumable output’ (CW V, p. 48). When he first introduces liquidity preference, Keynes writes ‘there is a further decision which awaits [the individual], namely, in *what form* he will hold the command over future consumption which he has reserved, whether out of his current income or from previous savings’ (GT, p. 166). Thus consumable output seems the appropriate measure of value, at least for the purpose of understanding Keynes’s notion of liquidity.

On the strength of this, let us hazard a definition of liquidity in Keynes’s own terms to meet Shackle’s objection. Let Keynes’s liquidity be ‘the degree to which the value of an asset in terms of consumable output is independent of changes in the state of long-term expectation’. This definition of liquidity makes no direct reference to the convertibility of assets. It implies, in particular, that equity shares are less liquid than bonds, which in turn are less liquid than money (see quotation from Kaldor above, and discussion of Minsky below). Liquidity here relates to the possibility of an unexpected change in the price at which assets can be transferred in a perfect market,

and which reflects the tenuous and conventional valuation of their prospective yield. In the passage where he comes closest to a definition from first principles, Keynes writes:

In [a non-monetary] economy capital equipments will differ from one another (a) in the variety of the consumables in the production of which they are capable of assisting, (b) in the stability of value of their output (in the sense in which the value of bread is more stable through time than the value of fashionable novelties), and (c) in the rapidity with which the wealth embodied in them can become 'liquid', in the sense of producing output, the proceeds of which can be re-embodied if desired in quite a different form. (GT, p. 240)⁷

Liquidity, it seems, is partly a function of the degree to which a capital asset can be used in the production of different consumables, so that a change in prospective yield based on production in one line can be met by switching to another line. The prospective yield on the second line is lower than originally expected from the first, but higher than now expected from the first after the change in the state of long-term expectation. Keynes also refers to the importance of the stability of the value of the consumables produced. Stability in this context means independence from changes in the state of long-term expectation (e.g. bread, at least in Keynes's time, was not a fashion item). The third element of his definition is the period over which the asset can be converted through production into consumable output. The shorter the period, the less likely is it that a change in the state of long-term expectation will arise during the life of the asset. Keynes is here thinking in aggregate terms: although an individual investor can always exchange one asset for another under perfect competition, its convertibility for the community as a whole depends on its conversion into consumption goods through production and not just exchange.

Keynes's treatment of the inducement to invest can now be restated in these terms. The current value of bonds in terms of money is not independent of changes in the state of long-term expectation about the future course of interest rates over the life of the bond. There is therefore a risk of loss if the investor needs to sell the bond prematurely and expectations of interest rates have changed. Money is the dominant store of value because its value in terms of consumable output is the most independent of such changes in the state of long-term expectation. The marginal efficiency of bonds in terms of money is the rate of interest. Since the marginal efficiency of money in terms of money (its own-rate of interest) is zero (assuming no yield or carrying costs), the rate of interest is a direct measure of the premium required to overcome liquidity preference for money over a corresponding period. The marginal

efficiency of a new capital asset must in turn exceed the interest rate by a margin sufficient to compensate both for 'risk proper' and for any liquidity risk of the asset relative to bonds.

On this definition of liquidity, the meaning of Keynes's reference to land becomes clear. The demand for land as a store of value, which may keep up the money rate of interest, can be understood in terms of the physical relationship between the value of land and the real wage, together with its rental yield in excess of carrying costs. Keynes explicitly refers to this phenomenon in the context of agricultural economies, in which the real wage, which governs the cost of production not only of agricultural but also of all other products and services, is defined primarily in terms of agricultural output. In an agricultural economy without a developed banking system, the stability of the value of land in terms of the real wage and the security of a mortgage on land could make them attractive alternatives to other investments and currency in the absence of secure bank deposits or government bonds.⁸ This tendency will be enhanced if the value of money is unstable, but Keynes's argument does not rely on such instability. On this reading, Keynes's liquidity is something different from, and even to some extent independent of, convertibility. If land is held for its stability as a store of value, the question of its degree of marketability is secondary. Landowners can usually take their time to realise full market value, and transaction costs, while substantial in absolute terms, are small in proportion to value.

With industrialisation the value of the real wage becomes more independent of agriculture and the value of land, and stability in terms of the money wage becomes more important. Although this in itself only encourages the holding of money, the emergence of an organised market for prime long-term bonds provides an alternative store of value offering a pecuniary yield. Here, while the better marketability of bonds is certainly a factor, yet the primary issue is the relative stability, of the value of bonds in terms of money compared with real assets (including land) and in turn of the value of money in terms of consumable output, with respect to changes in the state of long-term expectation.

2. 'Liquidity' as an illusion of organised investment markets

The connection between the above definition of Keynes's liquidity and the 'liquidity' of organised investment markets is indirect, perhaps even obscure. The 'liquidity' of

such markets is for Keynes a separate and rather different concept.⁹ It depends on the willing suspension of disbelief in the precariousness of the conventional basis of valuation and contrasts with the liquidity of money, in particular, which is least unaffected by such changes in the state of expectation.

The point is illustrated by Keynes's statement 'that each individual investor flatters himself that his commitment is 'liquid' (though this cannot be true for all investors collectively)' (GT, p. 160). Since, as noted above, Keynes in general treats capital assets and equity shares as equivalent, this 'liquidity' does not refer to the division of claims on physical assets into standard shares, transferable with low transaction costs: a necessary condition for any organised investment market. Keynes has already assumed perfect transferability and convertibility at the current market price. The benefit of true liquidity in Keynes's sense lies in the ability to reverse an investment decision without loss *after* any future change in the state of long-term expectation. Specifically, an initial decision to hold money can be reversed, and the original value of the sum of money preserved to purchase bonds or capital assets if the state of long-term expectation changes so as to favour the latter in the mind of the investor. Unlike Keynes's liquidity, 'liquidity' depends on the maintenance of the current state of long-term expectation long enough for the investor to beat the gun and reverse the investment *before* the state of long-term expectation changes.

Keynes's liquidity is objective, since for the community as a whole money is the asset whose value is invariant, or most invariant, to sudden changes in the state of long-term expectation. 'Liquidity' is an illusion fostered by convertibility, and differs from liquidity; Kregel (2012) calls it 'fictitious liquidity'. 'Liquidity' depends on the 'average' state of long-term expectation of the community as a whole remaining unchanged. To benefit from 'liquidity' requires 'foreseeing changes in the conventional basis of valuation a short time ahead of the general public' (GT, p. 154), and therefore necessarily involves a speculative element.

The illusion of 'liquidity' is not simply an example of the fallacy of composition. 'Average opinion' (GT, p. 156) does not have a functional relationship with individual opinion in the same way that aggregate income is directly affected by individual expenditure. It is possible for average opinion to be maintained even if a large number of investors dissent from it. The maintenance of a particular asset price requires only that there are sufficient bids from investors (including market-makers)

who continue to follow average opinion to meet the offers from dissenting investors. By contrast, the liquidity of money in Keynes's sense exists for one and all.

3. Liquidity and transaction costs

In this and the next two sections, the definition of Keynes's liquidity offered here is placed in the context of other interpretations by leading post-Keynesian authors. The intention is to identify more clearly how this definition differs from theirs and why it cannot be reduced to their terms. All the interpretations can be seen as variations on the theme provided by Keynes's original definition of liquidity in *A Treatise on Money*.

Davidson does not accept Keynes's abstraction from financial structure in *The General Theory*, and follows Joan Robinson in distinguishing between capital assets themselves and their titles, included along with bonds as 'placements' (Davidson, 1972, p. 62). Keynes explicitly rejects this distinction in favour of the tacit assumption of perfect competition necessary for the value of individual assets to be independent of their situation (see footnote 2). The difference between the liquidity of capital assets and their titles, so important in Davidson, is absent from *The General Theory*. Placements for Davidson are liquid ('transactions costs ... are very low', 1972, p. 262) and not merely 'liquid' (in Keynes's sense), in contrast to the illiquidity of heterogeneous capital assets for which 'spot markets ... are very poorly organised, if they exist at all ... [implying] very high transactions costs' (1972, p. 93).

For Davidson, transaction costs are the main determinant of the degree of convertibility and so of liquidity. 'Transaction costs (of holding alternative assets) in the broadest sense - that is including the *fear* of rapid *unpredictable* rates of change in spot prices, and operating in a thin spot market where no financial institution will act as a residual buyer and seller - are basic to the transactions, precautionary and speculative demands for money' (1972, p. 193). Here he extends the concept of transaction costs to include costs associated with imperfect competition and with Keynes's liquidity risk in the sense defined above. The present argument requires that these three types of cost are kept separate. On the present definition, liquidity risk can exist without either imperfect competition or direct transaction costs, both of which are absent from the markets for capital assets in *The General Theory*.

Keynes's liquidity and convertibility are separate attributes and, as the reference to land shows, to some extent independent. This cannot be reconciled with Davidson's statement that 'Those assets with low carrying costs, very low elasticities of production and substitution (compared with reproducible assets), *and whose spot markets are the best organised in any economic system* will (by definition) possess the greatest degrees of liquidity' (1972, p. 190, emphasis added).

What is in question here is not the comparative realism of the assumptions made by Davidson and Keynes. The distinction between capital assets and placements may be of great importance to the development of theory, post Keynes. Nor is it in dispute that under modern conditions Keynes expects liquid assets also to be highly marketable. The point is that Keynes must have something else in mind in his conception of liquidity, beyond convertibility, and considers it of fundamental importance.

4. Liquidity, financial structure and cash flow

Minsky (like Davidson) treats equity shares as a form of 'risky debt' subject to similar service requirements to normal debt.¹⁰ His emphasis on financial structure contrasts with *The General Theory*, as noted above, and indeed Minsky is critical of Keynes on this point: '[Keynes's] discussion [in Chapter 17], though perceptive, is flawed because he does not explicitly introduce liability structures' (Minsky, 1975, p.79). Directly related to his concentration on financial structure is Minsky's view of liquidity, which connects to financial structure via cash flow.

Minsky identifies liquidity with convertibility into money and his point of departure from Keynes can be seen in the interpretation of the precautionary motive. Noting the 'convenience of holding assets in the same standard as that in which future liabilities may fall due', Minsky discounts the second half of Keynes's sentence: 'and in a standard in terms of which the future cost of living is expected to be relatively stable' (GT, p. 237). Indeed he repudiates the latter, stating

Money is not an asset with an invariant value with respect to income, for the price level of current output can change. Furthermore, the value of money in terms of other assets, including real capital, is not invariant – the money price of real and financial assets can change. Money is of invariant value only with respect to money contract and payment commitments denominated in money – regardless of whether these payment commitments are due to debts, taxes or current transactions. (Minsky, 1975, p.72)

Minsky's focus is on 'the *cash flow* from 'the power of disposal over an asset' (GT, p. 226) that Keynes makes much of' (Minsky, 1975, p. 82, emphasis added). The difference in understanding of liquidity again leads Minsky to be highly critical:

Unfortunately [Keynes's] discussion on finance and portfolios, and how they relate to the pricing of capital assets and the pace of investment, is muddled. This is so partly because he chose to suppress the price of capital assets in his statement of his liquidity preference function. Instead of explicitly introducing both the price of capital assets and the terms on money loans in his discussion of portfolios, he phrased his argument in terms of interest rates. ...As a result... the full power of his reasoning was obscured and lost to the interpretive work that followed. (Minsky, 1975, p.69)

Keynes does not for the most part treat capital assets as liquid (as opposed to convertible), although he recognises they may be perceived as 'liquid' in the illusory sense discussed earlier. It is only in Chapter 17 that the liquidity of capital assets is seriously entertained. At this point liquidity enters into the price of capital assets almost as a footnote, as an additional source of discount for risk, for liquidity risk relative to bonds.¹¹ The rate of interest on bonds, where there is no 'risk proper', is entirely compensation for liquidity risk. Keynes writes, immediately following the paragraph on the 'non-monetary' economy quoted earlier:

The owners of wealth will then weigh the lack of 'liquidity' of different capital equipments in the above sense as a medium in which to hold wealth against the best available actuarial estimate of their prospective yields after allowing for risk. The liquidity-premium, it will be observed, is partly similar to the risk-premium, but partly different;—the difference corresponding to the difference between the best estimates we can make of probabilities and the confidence with which we make them. When we were dealing, in earlier chapters, with the estimation of prospective yield, we did not enter into detail as to how the estimation is made: and to avoid complicating the argument, we did not distinguish differences in liquidity from differences in risk proper. It is evident, however, that in calculating the own-rate of interest we must allow for both. (GT, p. 240)

From this it is clear that Keynes regards capital assets as less liquid than bonds, in the sense that their value is more sensitive to changes in the state of long-term expectation. The value of capital assets depends on expectations of both the interest rate and the prospective yield. On this definition of liquidity, money and bonds dominate capital assets in terms of both 'risk proper' and liquidity risk. The first step in the logical sequence of the portfolio decision is between money and the next most liquid and safe set of assets, i.e. bonds. Only then does the choice arise between capital assets and bonds (see also GT, p. 170, n. 1). Capital assets have indeed no business in the liquidity preference function and Keynes is quite consistent to express it solely in terms of the interest rate on bonds.

Failure to distinguish the nature of liquidity, being a non-exclusive property of money, from the nature and source of money in the power of organised society to impose debts (Wray, 1998; Bell, 2001; Peacock, 2017; Ingham, 2018), leads to misunderstanding of both ‘moneyness’ and liquidity. Keynes is explicit that ‘for a commodity to be the standard of value is not a sufficient condition for that commodity’s rate of interest to be the significant rate of interest’ (GT, p. 236). The authority to define the standard of value (meaning the money of account) together with the forms of money acceptable as means of payment does not *per se* make money the dominant store of value.¹²

5. Liquidity and price variability

Chick perhaps comes closest to the present interpretation of liquidity in her focus on the uncertainty of the conversion price, developing the theme touched upon in Davidson’s broad definition of transaction costs. She defines a perfectly liquid asset as one which ‘has a probability of one of realising its full value immediately’ (Chick, 1983, p. 304). As in Davidson, transaction costs and other imperfections in marketability are among the factors that reduce liquidity. Her main emphasis is on the point that perfect liquidity of money in terms of a particular good means that the money price of that good is *certain* to be stable. Uncertainty about the future price reduces liquidity, so that liquidity premium and expected change in price are not independent. This means the choice of numeraire is not neutral, since the degree of liquidity of an asset depends on the relative price of the standard against which it is measured. However, transaction costs and the general acceptability of money as the medium of exchange against which prices are set together limit the liquidity of non-money assets, ‘except when inflation is widely expected’ (Chick, 1983, p. 305).

In GT Chapter 17, Keynes explains the dominance of the money rate of interest using his $q - c + l + a$ analysis of the relationship between spot and forward market prices. The analysis is an exercise in comparative statics, forward-looking but conducted at a point in time, as are all portfolio decisions. All assets are assumed fully convertible at the spot and forward market prices ruling at that instant. A forward market gives a price today for delivery tomorrow; there is no uncertainty about the forward price, which is quite different from the spot price that may rule tomorrow. The equilibrium relationship between today’s spot and forward prices already includes an allowance

for anticipated changes in the value of money, although clearly not for unexpected changes. Anticipated inflation does not directly affect Keynes's argument, as he points out in his critique of Irving Fisher's ascription of a causal role to the real rate of interest.¹³

If, following Chick for the moment, liquidity is defined in terms of convertibility tempered by uncertainty about future prices, Keynes's liquidity premium l can no longer be considered independent of the price appreciation term a and indeed the carrying cost term c . Uncertainty about a reduces l relative to the particular asset. Carrying costs affect the attractiveness of using an asset as a medium of exchange for optimising the timing and composition of a flow of heterogeneous purchases, so that the lower is c , the higher is l .

Unlike Chick, Keynes clearly treats l as an independent variable in the sense that its value cannot be inferred from a and c , and there is evidence from the paragraph inserted in response to criticism by Joan Robinson (see CW XIII, p. 649, CW XIV, pp. 499, 351) that he considers uncertainty about future prices to be a separate matter. When discussing money becoming a 'bottomless sink for purchasing power', he qualifies this tendency

when the rise in the value of money leads to uncertainty as to the future maintenance of this rise; in which event a_1 and a_2 are increased, which is tantamount to an increase in the commodity rates of money-interest and is, therefore, stimulating to the output of other assets. (GT, p. 231)

Since the term 'value of money' means 'general purchasing power over consumable output', here Keynes addresses uncertainty only about the general price-level rather than about relative prices between heterogeneous goods.¹⁴ His inference that uncertainty leads to a rise in the equilibrium values of a_1 and a_2 (rather than a reduction in l) can be understood to mean that the possibility that the value of money may fall, and so the price of other assets rise, creates additional demand in the forward market for assets. Hedging buyers are prepared to pay a premium to insure against that possibility and speculative buyers also are prepared to buy forward, to the extent they believe that the future spot price will exceed the current forward price.

The demand for a store of 'value' relates to value as general purchasing power, although the basket of consumable goods in terms of which this is understood may change from time to time and depends on social practices and institutions (GT, pp. 240–1). Keynes does not consider the possibility of arbitrage over time between

the elements of this basket since he does not treat consumables as assets possessing exchange value. He also abstracts from the possibility of arbitrage between individual elements of the basket, or the basket as a whole, against assets, because he takes 'the propensity to consume as given' for the purpose of this analysis (GT, p. 236). Price variability therefore becomes an issue relating only to capital assets, bonds and money. Since Keynes treats capital assets as dominated by both bonds and money in terms of liquidity risk, it is reasonable for him to consider only the *net* liquidity premium between bonds and money, even if bonds and capital assets both possess some degree of liquidity. On his own terms of engagement, his treatment of the uncertainty of future prices is complete.

If Keynes abstracts from imperfections of competition by way of transaction costs, marketability and financial structure, and addresses uncertainty about the general price level through the forward market price of assets, the independent source of his liquidity premium in *The General Theory* must be sought elsewhere.

6. Liquidity and stability of value

The question then arises of the relationship between two alternative definitions of stability of value, on the one hand with respect to changes in the state of long-term expectation and on the other, in terms of labour. Keynes is explicit that sticky money wages are a consequence rather than the independent source of the liquidity of money: 'It is because of money's other characteristics - those, especially, which make it *liquid* - that wages, when fixed in terms of it, tend to be sticky' (GT, p. 233). The stability of the value of money in terms of consumable output is the primary cause of the stickiness of money wages, although Keynes acknowledges that this stickiness in turn feeds back and reinforces the stability of the value of money in terms of consumable output. When he considers the necessary properties of an alternative commodity standard for fixing wages, the need for its liquidity premium to exceed its carrying costs in order to absorb excess supply (together with the stability of its normal supply price) is a prior condition for stickiness. The liquidity premium therefore cannot itself be the result of wage stickiness.

Keynes is ambiguous in his use of the term 'stability of value' of an asset, as noted by Lerner (1952).¹⁵ Does he mean stability over time, stability in terms of consumable output, or stability with respect to changes in the output of the asset itself or in total

output? The distinction between stability ‘in terms of’ and ‘with respect to changes in’ is important and corresponds in mathematical terms to the difference between a denominator and a derivative. If indeed he means stability in terms of consumable output, with respect to changes in what is the value stable? If changes in value over time (i.e. with respect to changes in time) and with respect to changes in output are possible, stable value cannot mean simply constant value. This suggests there is an unstated factor with respect to changes in which Keynes considers value to be stable in terms of consumable output.

This is a case where mathematical notation may help to clarify verbal reasoning. Let $V \equiv m/p_c = V(N, q_m, t, x)$ where V is the value of a unit m of the liquid asset divided by the expected general price level of consumable output p_c in terms of the liquid asset; N is total employment; q_m is the output of the liquid asset; t is time and x is another unspecified argument. Then the question becomes, does stability of value mean $\partial V/\partial N \approx 0$, or $\partial V/\partial q_m \approx 0$, or $\partial V/\partial t \approx 0$, or $\partial V/\partial x \approx 0$?

Keynes readily accepts that the value of money is not invariant to total output or employment, as discussed at length in Chapter 21 GT, so he does not mean $\partial V/\partial N \approx 0$. Our discussion of price variability in the previous section suggests that stability over time $\partial V/\partial t$ is not Keynes’s prime concern in this context. His discussion of an alternative commodity standard for wages refers to stability of value both as stability in terms of consumable output with respect to changes in the unspecified factor $\partial V/\partial x$ and as stability with respect to changes in its own output $\partial V/\partial q_m$:

The expectation of relative stability in the future money-cost of *output* might not be entertained with much confidence if the standard of value were a commodity with a high elasticity of production. ... Such an expectation requires ... that the costs of the commodity in question are expected to be relatively constant in terms of the wage-unit for a greater or smaller scale of *output* both in the short and in the long period (GT, pp. 237–8, emphasis added).

‘Output’ has a different meaning in these two sentences. Here there are briefly two concepts of stability in use simultaneously, but Keynes quickly discounts the practical relevance of $\partial V/\partial q_m$. Instead he emphasises the ‘zero, or at any rate very small, elasticity of production’ of money (GT, p. 230), so that changes of value with respect to changes in own output are no longer possible to any material extent. So on this

reading, by stability of value in the first sentence Keynes means $\partial V/\partial x$, stability of value in terms of consumable output with respect to changes in an unspecified factor, which our argument suggests is the state of long-term expectation. Beyond this point, since the state of long-term expectation is not a numerical quantity, mathematical exposition is neither helpful nor possible.¹⁶

So why should the value of money be more stable than the value of other assets in terms of consumable output, with respect to changes in the state of long-term expectation? In the case of a non-monetary economy, Keynes differentiates between different types of capital equipment in terms of their versatility, independence from fashion, and turnover period in producing consumables, all of which govern the relation between the value of their specific potential output and consumable output in general, a relation which may be more or less stable with respect to changes in expectation. ‘Non-monetary’ means that money in the sense of a means of payment is not a good store of value, whose liquidity premium always exceeds its carrying costs, although there must be at least one standard of value in which prices and debts are expressed, conceivably barley grains as in ancient Mesopotamia, and perhaps a variety of media of exchange and means of payment as in medieval Europe or the North American colonies. In such an economy, the most liquid store of value (e.g. land) may well differ from the standard of value (e.g. shillings) and the means of payment (e.g. dried fish or tobacco). By contrast, in a monetary economy where the means of payment is a non-producible asset with negligible carrying costs, the value of the means of payment *is* the general price level of consumable output precisely because it corresponds directly to the standard of value in which prices are set. The value of such a money is invariant to changes in the state of long-term expectation, so long as the possibility is not seriously entertained of its related money of account ceasing to be the standard of value within its monetary space (Ingham, 2018).¹⁷

7. Conclusion

This paper offers an answer to Shackle’s rhetorical request of Keynes for an explicit definition of liquidity: as the degree to which the value of an asset is independent of changes in the state of long-term expectation. Liquidity is not to be confused with convertibility or with the illusory ‘liquidity’ of organised investment markets. Its primary source is the fundamental uncertainty that Keynes regarded as one of the two

primary themes of *The General Theory* in his single post-publication commentary on the book (Keynes, 1937).

This interpretation, while novel, remains within the scope of Keynes's definition in *A Treatise on Money*, with the emphasis on 'more certainly realisable at short notice without loss'. The route to this definition of liquidity is to face squarely the paradox that Keynes assumes perfect competition in the markets for capital assets while emphasising the uniqueness of money. It is also to take seriously certain puzzles such as Keynes's use of the term 'liquidity' (in quotation marks) in relation to organised investment markets and his reference to the liquidity of land.

If this definition of Keynes's liquidity is accepted, it changes materially our understanding of liquidity preference and of the relationship between money, finance and investment. The shortcomings of the treatment of 'liquidity preference as behavior towards risk' (Tobin, 1958) and of the axiom of gross substitution (Davidson, 2002) become clearer. The hierarchy of liquidity in *The General Theory*, so emphasised in Keynes (1937), no longer seems arbitrary. New lines of research become possible, for example, in terms of the reform of the international monetary system (Rivot, 2013; Amato and Fantacci, 2014; Carabelli and Cedrini, 2015; Hayes, 2017) and in corporate finance;¹⁸ these and other applications must now be pursued elsewhere.

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¹ Cardim de Carvalho (2013) considers the significant difference between Kaldor and Keynes over liquidity, employing an interpretation of Keynes's concept in line with Chick's, discussed later.

² This statement (upon which the thesis of this paper wholly depends) is not universally accepted – although it is accepted by at least Kahn (Marcuzzo, 1994), Harcourt (1994), Trevithick (1992), Marris (1997) and Smithin (2013) – and I have justified it at length elsewhere (Hayes, 2008). In brief, the assumption of perfect competition in the markets, of perfect markets, for capital-goods is necessary to Keynes's abstraction from financial and industrial structure, and is reflected in his statement that 'I should now [say] that a high quotation for existing equities involves an increase in the marginal efficiency of the corresponding type of capital ...' (GT, p. 151, n. 1).

As distinguished by Joan Robinson (1934), Keynes's 'degree of competition' (GT, p. 245) is an older and wider concept than the degree of monopoly and allows for temporary or permanent obstacles, associated with friction and closed shops respectively, to the entry of entrepreneurs and workers into particular occupations and in their access to credit. This is consistent with perfect competition (in the sense that the degree of monopoly is zero) in the markets for real capital assets and tradeable debts. In his post-publication correspondence with Ohlin, Keynes writes 'The reference to imperfect competition is very perplexing. I cannot see how on earth it comes in. Mrs Robinson, I may mention, read my proofs without discovering any connection' (CW XIV, p. 190).

Marshall, Pigou and Chamberlin preferred the terms 'free' or 'simple' or 'pure' competition. Keynes employs Marshall's general apparatus and concepts ('historians of doctrine will regard this book as in essentially the same tradition', GT, p. xxxi). Perfect competition is sometimes understood to mean perfect information but this association (made by Knight) is not intrinsic. For the avoidance of doubt, perfect competition here merely means that individuals take market prices as independent of their own decisions and that there are no transactions costs or other 'frictions'. It certainly does not imply either perfect information about the future or a Walrasian prohibition of trading at 'false' prices.

³ This is *not* the same as suggesting that 'medium of exchange services are the source of money's non-pecuniary return' (Cowen and Krozner, 1994, p. 380).

⁴ Keynes's economic thought is, of course, informed by his *A Treatise on Probability* (CW VIII).

⁵ A change in the state of long-term expectation may reflect either a change in confidence or a change in prospective yield (or both); the latter may include a change in neo-classical ‘fundamentals’ but also in forecasts of future effective demand and wage inflation (c.f. GT, p. 147). Confidence in prospective yields may be high yet still misplaced.

⁶ Koutsobinas (2011) seeks to develop Kahn’s theory of portfolio allocation based on differences in the degree of liquidity between assets.

⁷ Keynes is clearly uncomfortable with the term ‘non-monetary economy’ (GT, pp. 239, 190), since it is not possible to conceive, outside the pages of a treatise on general equilibrium theory, of a market economy without one or more means of (final) payment, meaning compulsory settlement or *unilateral* discharge of debt, which bear a relation fixed by authority to the money (or moneys) of account in which debts are calculated. A medium of exchange is not necessarily means of payment, e.g. promissory notes or bills of exchange (including, these days, those created by credit cards) may pass from hand to hand as transferable credits *by negotiation* but eventually require settlement.

⁸ Before the English Parliament accepted liability for the national debt under William III and the Bank of England was formed to act as the market maker, public debt was either a mortgage on specific tax revenues or simply the debt of the monarch. Such debt was illiquid, in both the usual sense and Keynes’s.

⁹ Throughout his discussion of organised investment markets in Chapter 12 from GT, pp. 153–60, Keynes puts the words ‘liquid’ or ‘liquidity’ in inverted commas on no less than five occasions. It must be accepted that he also uses the inverted commas (no less than nine times!) in GT Chapter 17 (pp. 234–41). This use of punctuation for emphasis appears to be for different reasons in the two chapters.

¹⁰ ‘Except when it involves shares this pledge [of debt service] is contractual, with penalties for default; for shares any deviation of dividends from the expected will affect equity prices’ (Minsky, 1975, pp. 106–7).

¹¹ Rivot (2013) and Carabelli and Cedrini (2015) consider in depth the illiquidity of ‘liquid capital’, of stocks of finished goods, and the consequent ‘fear of goods’.

¹² Thus Keynes’s concern with Gesell’s proposal was not that it would create ‘substitutes that would serve as medium of exchange’ (Ilgmann, 2015, p. 556). Furthermore Keynes would not, on this reading, accept as sufficient that ‘to describe money as liquid is much the same as to say that it serves as a generalised means of payment’ (Lawson, 2016, p. 973).

¹³ Since Keynes’s liquidity relates to future purchasing power, it may be that the liquidity premium should include an explicit allowance for expected inflation so that $l \equiv \dot{p}_c^e + l'$, where \dot{p}_c^e is expected inflation and l' is the ‘real’ liquidity premium. a becomes the expected price appreciation of a particular asset in excess of the expected rate of general inflation. A hyper- or ‘unstable’ inflationary economy may then be one in which $l > 0$ and $l' < c$, similar to Keynes’s ‘non-monetary’ economy in which the standard of value is no longer the asset with the highest l' . There is a hint that Keynes accepts the

possibility of $l' \leq 0$ if the money supply is too elastic (GT, p. 241, n. 1). On this reading, uncertainty about the future price level can destroy liquidity if it reaches catastrophic proportions, but it is not the primary source of liquidity under conditions of 'stable' inflation (such that $l' > c$).

¹⁴ Tony Lawson (2016) prefers the term 'transaction power' to 'purchasing power' on the grounds that transactions include taxes and other payment obligations. For Keynes, 'all production is for the purpose of ultimately satisfying a consumer' (GT, p. 46) and value is consumable output in general; investments and transfer payments are a means to obtaining consumable output and derive their value therefrom.

¹⁵ Lerner insists that stability means 'over time' and that Keynes confuses stickiness and stability (1952, p. 186). Lerner defines liquidity simply as 'purchasing power' (p. 184) and regards its source as the general acceptability of a medium of exchange, 'the saving of mental effort' (p. 191). His analysis of the liquidity of land considers the motive for holding land to be prestige rather than as a store of value, so that (unlike exchange-value) there must come a point where substitution sets in. Hence Lerner concludes that the distinctive characteristic of a monetary economy is sticky money-wages, not liquidity preference, although he shares Fisher's objection to a policy of wage-cuts and deflation.

¹⁶ In a 1934 draft of *The General Theory* Keynes experimented with a functional specification of 'the propensity to invest' including a variable E denoting the state of long-term expectation (CW XIII, p. 441), although this is later subsumed into the marginal efficiency of capital.

¹⁷ This condition might be expressed, in the terms of Keynes's analysis of price uncertainty referred to earlier, as the existence of a forward money price for alternative stores of value, including a spot price for bonds. A foreign money can become the *de facto* standard of value during a period of hyper-inflation or war.

¹⁸ I have argued that in modern conditions, financial crises apart, the main channel through which liquidity preference limits investment is the equity new issue discount, rather than the long-term bond rate (Hayes, 2003).